

**College of Arts and Sciences  
Department of Physics  
Course Syllabus**

**PHYS-109: Fundamentals of Physics I**

**I. Course Description**

This is an algebra-based general physics course for majors of the life sciences. The course deals with a wide variety of applications to the life sciences. Course content covers mechanics, wave motion and fluids. There are three lectures per week. Corequisite: PHYS 111.

**II. Rationale**

This course gives students majoring in the life sciences an introduction to physics using the language of algebra and trigonometry.

**III. Competencies**

- *Personal and Professional Responsibility.* Students will demonstrate personal and professional proficiencies in pursuit of academic excellence in all courses pursued.
- *Subject Matter and Presentation Skills.* Performance in courses as evidenced by final grades will document success levels in the mastery of subject matter, written and oral communication skills.
- *Planning and Organization.* Students will demonstrate ability to plan and organize personal and professional skills. Students will also demonstrate an ability to generalize techniques to structure activities that will impact teaching and learning.

**IV. Behavioral Objectives**

At the end of this course, the student will be able to:

- Understand the physical environment and its relationship to man.
- Gain knowledge and understanding of scientific laws, principles, and theories.
- Develop the ability to think critically and independently, and to reason effectively.

- Be proficient in oral articulation and written expression.
- Be adept in general and scientific terminology.

## **V.Course Content**

- Units and Problem Solving
- Kinematics: The Descriptions of Motion
- Motion in Two Dimensions
- Force and Motion
- Work and Energy
- Momentum and Collisions
- Circular Motion and Gravitation
- Rotational Motion and Equilibrium
- Solids and Fluids
- Temperature
- Heat
- Thermodynamics
- Vibrations and Waves
- Sound

## **VI. Learning Activities**

Lecture/Note-taking  
Solving Textbook Problems in Physics

## **VII. Special Course Requirements**

Students should develop proficiency in the use of handheld calculators. It is recommended that the student use a calculator with scientific functions.

Lecture/Note-taking, Writing Computer Programs, and Research Activities, Problem-Solving, assignments and Library experience.

### **A. Prerequisites by Topic:**

A laboratory course will accompany this course. Students may be expected to become conversant with computer programming using the language FORTRAN 77 or MATLAB, as well as maturity and willingness to do all assignments.

### **B. General Requirements**

~ All relevant GSU policies and regulations shall apply. Per Student Handbook, violation of student code can lead to disciplinary action (expulsion). These include but not limited to,

being disrespectful, dishonesty, profanity, obscenity, verbal assault, aiding and in-sighting.

- ~ An “I” grade will only be given when extremely adverse and well-documented circumstances arise at the end of semester. That definitely does not include making up for weak performance during the semester. In particular, the grade that the student had made until getting an “I” will still be included into computing the final grade after the student has completed the work necessary to alter the “I” grade.
- ~ Cheating will not be tolerated in any form. As a minimum, students will be given a grade of zero for any quiz or exam in which cheating, fraud, or mis-representation is found.
- ~ There will be **absolutely no** opportunity to raise your grade by doing extra credit work. The students will be graded solely on the basis of criteria mentioned below (exams, quizzes, and homework). Please do not ask for “Extra Credit Work”.
- ~ Class participation includes but not limited to coming to class on time, being awake in the class, and not distracting other students from listening to the class lecture, and asking relevant questions. Class discussion will be highly encouraged. Please never hesitate to ask the questions.
- ~ The course requires lot of hard work and additional reading. Students should carefully consider this in planning their other courses and activities. Attendance in all the classes is vitally important since class lectures have a close link with each other.

## VIII. Evaluation Process

### A. Methods

Students will be evaluated based on their performance in examinations (including comprehensive final examination), quizzes, homework, and class participation. The details are as follows:

### B. Attendance at Lectures:

- ~ I will take attendance but it will not count toward your grade. You are responsible for everything covered in lecture, even if it isn’t in the book. If you miss a lecture, you should obtain notes from another student. Note-taking styles vary widely, however, and I encourage you not to routinely rely on the notes of others. You are also responsible for announcements made during lecture concerning the content and types of problems to be expected on exams.

**C. Examinations:** I’m still toying with the format of the course. At a minimum, there’ll be a midterm and final, though I think I’d like to have at least two in-class exams. None of the exams will be dropped for the lowest score or for any other reason. All students are required to take every test as scheduled. No makeup tests will be given unless arranged for in advance(see more below). The makeup test should be arranged within a week since the original date scheduled. The official excuse is required to take the makeup test. No more than one makeup test per student will be allowed during the semester.

**D. Quizzes:** There will possibly be several unannounced quizzes throughout the semester. There will be no makeup for the quizzes. If you miss a quiz, however, you must have a legitimate, university approved excuse and you must also contact **Dr. Strong** as soon as possible (but no later than one working day after the absence) letting him know. Note: “If the absence occurs the same day as a scheduled quiz or other graded procedure (exam), the student must notify **Dr. Strong or the Physics Department secretary**, by the end of the working day. Acceptable excuses are participation in an activity appearing on the university authorized activity list, death or major illness in a student’s immediate family, illness of a dependent family member, participation in legal proceedings or administrative procedures that require a student’s presence, religious holy days, illness that is too severe or contagious for the student to attend class (to be determined by Health Center or off-campus physician), reasonable required participation in military duties. You must provide adequate documentation for your excuse. Only under reasonable circumstances will late assignment be acceptable, and then these are subject to penalty for lateness. Quizzes might be given at any time during the class period.

- ~ In general, only one make-up exam will be scheduled for all for a missed exam. Make-up quizzes or exams will typically be slightly harder than regular exams. If you desire to “Haggle” for points, you must do so immediately the graded exam papers are returned. This means you must be present when the graded papers are returned. You loose any opportunity to gain any extra credit if you are not present when the papers are returned.
- ~ Do not come to me towards the end of the semester desiring extra work to boost your grades because you want to maintain your scholarship or graduate.

**F. Assignments:** There will be periodic homework assignments as well, and maybe a project of some sort. Homework assignments are extremely important. They can really make the subject material extremely clear and prepare you for tests and quizzes. It is expected that each student will complete it as much as possible. If you do your homework assignments regularly and conscientiously you will really benefit from the course a lot. I will able to cover more material in the class and this, in turn, will provide you rewarding experiences in your other courses. If there are any questions, you can come and see me during my conference hours or make an appointment. First several minutes of lecture period will be utilized to answer questions regarding homework assignment.

**G. Class Participation:** Class participation includes but not limited to coming to class on time, being awake in the class, and not distracting other students from listening to the class lecture, and asking relevant questions. Class discussion will be highly encouraged. Please never hesitate to ask the questions.

**H. Grading Scale:** Since I haven’t decided yet, a grading system will look something like this:

item	percentage
HW	20
Project	20
Midterm	30

Final	30
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Or maybe this

item	percentage
HW	20
Midterm I	25
Midterm II	25
Final	30

Or better yet this

item	percentage
HW	25
Midterm I	25
Midterm II	25
Final	25

The Final grade will be determined on the basis of total average at the end of the semester using the following scale:

**90 -100 A, 80-89 B, 70-79 C, 60-69 D, 0-59 F**

### **VIII. Evaluation Procedures**

A lecture quiz will be given approximately every two weeks. Each quiz will be announced one week in advance. Exams will consist of multiple choice items, essay questions, and problem solving

A major exam will be given at mid-term and at the end of the semester to determine the students' cumulative knowledge. The grade in the course will be calculated using the following formula and scale:

Quizzes and Exams	=	75
Homework	=	25
Total	=	100

Grading scale:	A	=	90 or more points
	B	=	80 – 89 points
	C	=	70 – 79 points
	D	=	60 – 69 points
	F	=	59 or below

## **IX. References**

### **Textbook:**

Wilson, J. D., *College Physics, 3rd Ed.*, Saunders College Publishing, Fort Worth, 1996.

### **Recommended Journals**

*The Physics Teacher*

*Physics Today*

*Computing in Science & Engineering*

*Journal of Undergraduate Research*

*Journal of College Science Teaching*

Cheating will not be tolerated in any form. As a minimum, students will be given a grade of zero for any quiz or exam in which cheating, fraud, or mis-representation is found.

### **ADA Assurance Statement**

Grambling State University adheres to all applicable Federal, State and Local laws, regulations, and guidelines with respect to providing reasonable accommodations, for students with disabilities. Students with disabilities should register with the ADA student services coordinator and contact their instructor(s) in a timely manner to arrange for appropriate accommodations. If you need accommodations in this class related to a disability, please make an appointment as soon as possible.

**ALL CELL PHONES SWITCHED TO OFF!**